Subject: 4pi Dinner Theater Update
Posted by dutchswan0311 on Sun, 01 Jul 2012 20:11:56 GMT
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Below are a couple of images of the baffle wall's construction. The wall's foundation, which houses the four F20 subs, is 169" wide and is 63" tall. The overall baffle wall will end up being about 165" wide x 160" tall with an AT screen that measures 194" on the diagonal (@ 16x9).

The subs are screwed to a 3/4" platform of OSB in order to raise them to the level of the finished hardwood floor that will be installed at a later date. They are also glued/screwed to the 2x6 supports for the baffle wall (or perhaps it might be more accurate to state that the baffle wall supports are screwed to them). I had originally planned to keep them "floating" under the baffle wall, but it ended up being much easier to do it this way. Time will tell if I made the right choice.

The left and right mains are angled inward at 9 degrees with a focal point that is a distance of 2/3 the length of the room away from the baffle wall. The platform on which they rest is 3/4" OSB, and with their final resting place determined; I screwed them down to this platform from underneath ensuring they will not move. From here, I will proceed building the baffle wall around them. The plan is to frame around the 4pis, leaving them to protrude 3/4" past the finished wall so that they will be flush with the acoustical treatments that will be applied. The final size of the screen will be a maximum of 169" wide x 95" tall (194" measured diagonally).

P.S. Don't worry about the safety of my 4pis with consideration to the fact the interior is still under construction. 1/2" OSB will cover the front of the baffle wall until the space is finished, and will then be replaced by the AT screen.

Subject: Re: 4pi Dinner Theater Update
Posted by Wayne Parham on Mon, 02 Jul 2012 00:50:39 GMT
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Looking great!

Your customers will truly enjoy a treat. What kind of food is on the menu? What kind of movies will your theater show?

Subject: Re: 4pi Dinner Theater Update

Posted by dutchswan0311 on Mon, 02 Jul 2012 01:12:55 GMT
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The food will be catered (initially), and will vary depending on our target audience. The type of movies we play will also depend on cost. It would be nice to show first-run movies, but I am not sure how practical that will be if we only have one showing every Friday night...or perhaps two if we do Saturday nights as well. We are still running through the logistics of what our Dinner Theater will be able to afford according to demand and what our market can support.

Genre? Again, probably a range of movies, but let's face it; women wine drinkers outnumber men wine drinkers 3:1...so I see a lot of chic-flicks in our future lol. But...also imagine the male crowd we will attract with our 5,000 Watts and 194" screen showing "the game" on Monday nights. While we are a winery, we will also sell beer at our wine bar

Subject: Re: 4pi Dinner Theater Update
Posted by Wayne Parham on Mon, 02 Jul 2012 04:11:21 GMT
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Wow, that's really going to be cool. You can show some classics - both old and new - while the happy guests eat, drink and become merry. Sounds like a great time. Gotta love it!

Subject: Re: 4pi Dinner Theater Update
Posted by NWCgrad on Fri, 06 Jul 2012 17:40:09 GMT
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Those F-20s make the 4 Pis look small, not an easy task. When people see my 4 Pi's they think I'm nuts, when they hear them they know I am not!

Subject: Re: 4pi Dinner Theater Update
Posted by dutchswan0311 on Fri, 06 Jul 2012 19:15:01 GMT
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The baffle wall is nearing completion. I will post some more pictures tonight.

Subject: Re: 4pi Dinner Theater Update
Posted by dutchswan0311 on Sat, 07 Jul 2012 03:02:51 GMT
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Here are the latest pictures of the baffle wall. The OSB will be covered with 1" black duct liner.

Subject: Re: 4pi Dinner Theater Update
Posted by zheka on Sat, 28 Jul 2012 00:51:09 GMT
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this is one of the best speaker p0rn thingies I've watched lately.
respect.

Subject: Re: 4pi Dinner Theater Update
Posted by Wayne Parham on Sat, 28 Jul 2012 03:45:15 GMT
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Nice!

Subject: Re: 4pi Dinner Theater Update
Posted by dutchswan0311 on Mon, 17 Sep 2012 00:52:57 GMT
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Standing on the stage looking at the west wall (and baffle wall) of the theater prior to the application of fire rated paint to the ceiling and the installation of the sheetrock. The black you see on the baffle wall is 1" Linacoustic RC duct liner installed semi-flush with the speakers (the 4pi mains stick out about 1" from the Linacoustic RC...I gave myself too large of a margin of error). The screen size should come in at just under 200" measured diagonally at 16:9.
The Center Stage XD™ screen will come from Seymour AV. The 5' of bafflewall under the screen will be finished in stained oak. At this height, the horns of the 4pis are pointed directly at the ears of the average person standing.

Standing on the stage looking at the balcony (east side of the theater) after the application of fire rated paint to the ceiling, but before the installation of sheetrock.

Standing in the middle of the theater looking east at the ceiling over the balcony after the installation of sheetrock. This is the finished look of the sheetrock, but before the application taping/mudding/painting.

Standing on the South side of the theater, panning west at the ceiling. This is the finished look of the sheetrock prior to taping/mudding/painting.

Standing on the South side of the theater, looking at the upper west wall and ceiling of the theater. Again, the sheetrock is completed, but the taping/mudding/painting has yet to be done. The rafters are insulated with open cell spray foam at an average thickness of 8". The spray foam was then sealed with a code required fire retardant paint at twice milspec.

Standing on the South side of the theater, looking Northeast at the stage partially sheetrocked. The server rack that houses the A/V equipment will be behind the arch on the left hand side. You will only be able to see it from the far east side of the theater.

Standing on the stage looking at the Southwest corner of the theater. You can see two of the three 8' x 6' French doors that are evenly spaced on the theater's south wall. Above each door are boxes for dmx cable. Above the middle door is emergency lighting & an exit sign. Above the middle and left door (not seen in this photo) are the boxes for speaker wire.

Subject: Re: 4pi Dinner Theater Update
Posted by dutchswan0311 on Mon, 17 Sep 2012 00:58:55 GMT
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I might have asked this question before, but I cannot find nor remember the answer. Aesthetically, the twelve 1pi surround speakers will look better installed horizontally rather than vertically. Is there any issues with them being installed this way? If not, should I install them with the tweeter toward the screen, or the woofer toward the screen?

Any thoughts on how to acoustically treat this space in light of the fairly "open ceiling" concept employed in which the rafters are largely exposed with very thick open cell spray foam (painted black)? In case it should matter, the floor will be 3/4" acacia hardwood flooring.

Subject: Re: 4pi Dinner Theater Update

Posted by Wayne Parham on Mon, 17 Sep 2012 06:10:06 GMT
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Definitely do not install the speaker laying on its side, with the tweeter and woofer arrayed horizontally. When the speaker is upright, off-axis response is much better with movement along the horizontal axis, and it stays pretty uniform as the listeners move horizontally.

Subject: Re: 4pi Dinner Theater Update
Posted by JCDC on Tue, 18 Sep 2012 01:37:48 GMT
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To visualize what Wayne is saying, check out the 4 Pi measurements (principle applies to all two ways):

http://www.pispeakers.com/Measurements/fourPi.html

The 4th and 3rd last graphs are horizontal measurements (mmmm, smooth.)

The 2nd last and last graph are vertical measurements (valley!)
This is an interference notch.

Keep them drivers aligned vertically!

Cheers,
Jeff

Subject: Re: 4pi Dinner Theater Update
Posted by dutchswan0311 on Tue, 18 Sep 2012 01:59:13 GMT
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My last post started a new page. I posted some updated images of the space on the previous page in which the three 4pi and twelve 1pi speakers will be connected. I am curious if anyone has an opinion about how acoustics will be affected by this space, and what things I should consider in its regard.

Subject: Re: 4pi Dinner Theater Update
Posted by Wayne Parham on Tue, 18 Sep 2012 05:50:09 GMT
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It's hard to say just by looking. But there are a few generalizations that I think may apply to you.

One is the larger the room, the smoother it is. Room modes get shifted down below the passband (and so don't exist) at some point. And reflections are further away, so they're more attenuated.

Another is slanted or gabled ceilings tend to increase ceiling slap, since they direct it like a parabolic reflector. That and hard floors can be a killer, so limited verticals are your friend. Then again, once the ceiling is high enough, it stops being a problem. Or if it is well damped, that helps too.

One quick and easy test is to clap your hands in the room. This creates a pretty good "signal" to tell you what to expect from the room. If the sound is primarily just the direct sound from your hand slap, with maybe a little bit of ambience, your room is probably going to sound pretty good. If it sound too lively, sort of a ringing like tinnitus, the sound you hear in your ears after a loud concert, then the room needs more absorbent material. On the other hand, it can be too dead. If you hear nothing at all from the room, no reflections, just the initial clap that sounds more like a thud without much "slap", then the room may be so absorbent that it sounds somewhat dead.

Walk around the room giving a sharp clap from time to time and listen to the room decay. It may be different in different places in the room, especially with a gabled ceiling. That will give you a quick feel for room acoustics.

Subject: Re: 4pi Dinner Theater Update
Posted by dutchswan0311 on Wed, 10 Apr 2013 02:26:20 GMT
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I just thought I would offer an update on our dinner theater. We finally got everything all trimmed out. For those of you who might have forgotten, we utilized three upgraded 4pis flush-mounted in a baffle wall behind a 182" AT screen. Twelve 1pis were used for the surround sound in our 7.2 setup that also uses four DIY F20 folded horn subs integrated into the baffle wall (you can see the ports at the bottom of the image).

Subject: Re: 4pi Dinner Theater Update

Posted by Wayne Parham on Wed, 10 Apr 2013 03:24:35 GMT
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Oh, wow, that's looks so great. Very intimate, very nice. I simply must make a trip out there sometime and stay a while, visit your theater a few times and have dinner!

How do you feel everything turned out? Are you pleased with the quality? Are your customers impressed? Sure looks like they must be!

Subject: Re: 4pi Dinner Theater Update
Posted by dutchswan0311 on Wed, 10 Apr 2013 04:26:10 GMT
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Everything sounds great. It is all very articulate, but I have not really had the chance to "calibrate" anything yet. It will certainly go much louder than anyone could withstand, and I can produce clear bass that will knock the building off its foundation. I sometimes wonder if I might have been able to produce similar sound for less money, but I have never wondered if I could have had better sound for the same money (if that makes any sense). As is with anything, one always tries to find the dollar amount that will make 95% of the public happy. Satisfying the other 5% usually costs two or three times as much money. At the end of the day, I know our space satisfies 100%. The 1pis were definitely a money savings over all of the alternatives I considered. The DIY subs were a bargain and FAR cheaper than buying a finished product at retail. I know they are not of your Pi design, but lilmike's F20 from the avsforum.com really do deliver. I could probably have gotten away with only two of them, but they were cheap to build ($350/ea) and are also semi-permanent integrated furniture. I would rather run four of them at less power than two of them at higher power. Peace of mind that I will not blow a driver lets me sleep at night. The 4pi speakers were costly at about $850/each, but at the end of the day I do not regret splurging on the upgrades. They will be behind that screen for a LONG time.

I am surprised how directional everything is. The amps and receivers are tucked away in a server rack on the stage, and one has to be careful when setting volume and power levels. What you hear off to the side in the corner of the stage is not nearly what you hear when standing in the middle of the ballroom in front of everything. A lot of testing needs to be done in order to create "preset" settings for various scenarios (music vs movies vs television). Each movie is slightly different too. I find myself turning knobs a lot depending on my music or video source.